

Teacher Quality Research Grant Project

Sixth-Grade Science

Earth Science

2000 Science Standards III.4.a.4. (standards in operation during the 2005–06 school year).

The atmosphere has different properties at different elevations.

Compare and contrast the physical characteristics of the different layers of the atmosphere (e.g., troposphere, stratosphere, mesosphere, thermosphere, exosphere).

Measurable Objectives:

1. Students will identify the layers of the atmosphere.
2. Students will describe the physical characteristics of each layer of the atmosphere.
3. Students will compare the physical characteristics of the different layers of the atmosphere.

Rationale

A checklist will be used to assess this performance task because students are being required to recall layers of the atmosphere and their characteristics. In addition, to elicit students' comparisons guiding questions are posed. Each answer is conceptualized as being correct or incorrect so a checklist is the most appropriate measurement tool for this assessment. As a note, students are told how they will be graded in the performance task directions. Because the checklist is task specific and may cue students, the checklist will not be given to students at the same time as the performance task directions.

Bloom's Taxonomy

- Knowledge/Remember – Recall names of the layers of the atmosphere
- Comprehension/Understand – This is the predominant cognitive level the task addresses. Students are putting information that they have learned through previous instruction into their own words. Thus, the task and the standard are aligned because the standard is also written at the comprehension level.

Note

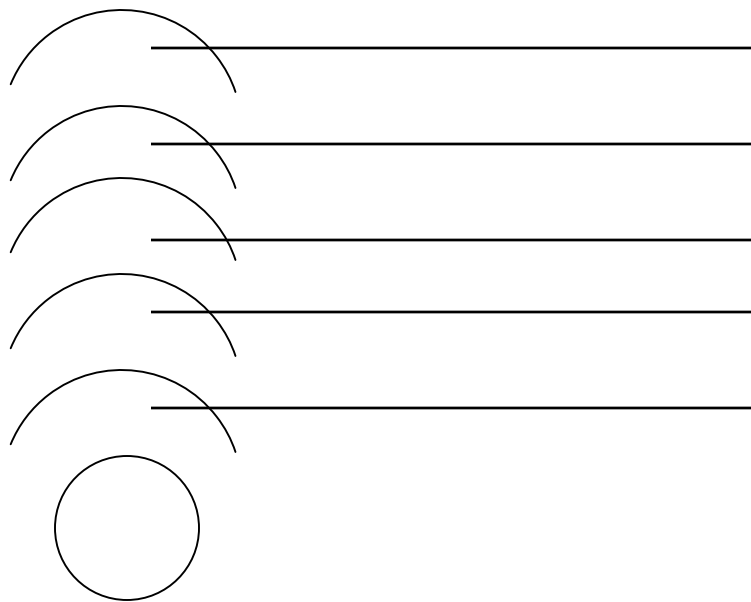
This performance task is conceptualized as a component of a unit on Earth's atmosphere and weather.

This performance task would be one component of a larger test to measure student understanding of the content. Thus, this would count 35 points toward the unit grade.

Performance Task

PART ONE

Below is a diagram of Earth and its atmosphere. Label the layers of the atmosphere on the diagram, and describe each layer's features in the table. Your grade will be based on correctly labeling the layers and describing each layer's features.



Layer Name	Features

PART TWO

Compare the features of the layers in a paragraph. Use the following questions to guide your comparison. Your grade will be based on how well you describe the differences in the features of the layers.

- **In which layer is air pressure the greatest and the least?**
- **Which layer is also called the ozone layer?**
- **In which layer is the range of temperature the greatest?**
- **In which layer is the temperature the coldest?**
- **Would clouds be found in the layers?**

PART ONE CHECKLIST

	troposphere	stratosphere	mesosphere	thermosphere	exosphere
Layer labeled accurately					
Temperature described accurately					
Altitude described accurately					
Pressure described accurately					
Other feature described accurately					

Total points for part one = _____ correct multiplied by .40 = _____ points out 10

PART TWO CHECKLIST

Topic	Correctly Answered	Weight	Total
Air pressure compared		5	
Ozone layer identified		5	
Layer with greatest range of temperature identified		5	
Layer with coldest temperature identified		5	
Clouds addressed		5	
Total Points for part two			

Final Score (35 points possible)	
Part One	
Part Two	
Total	